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XVI. *An Account of large subterraneous Caverns in the Chalk Hills near Norwich; by Mr. Wm. Arderon, F. R. S. comprised in a Letter from Mr. Henry Baker F. R. S. to the President.*

*Read March 24. 1747-8.*

**A**S the Inspection and Study of Na-  
ture is the particular Province of the *Royal Society*, and every Attempt to improve our Knowledge is certain of your Favour, I take the Liberty to lay before you the Substance of a Letter from my industrious Correspondent and Friend Mr. *William Arderon*, F. R. S. containing the Description of a large Vault or Cavern, extended under several Hills near the City of *Norwich*, with some Observations and Experiments made by him there.

About a Quarter of a Mile from the City of *Norwich*, on the East Side thereof, and near the Entrance of *Moufhold-Heath*, is a large subterraneous Cavern, which has been formed in a long Series of Time, by the digging out of Chalk for the making of Lime. There's but one Entrance into it, whose Breadth is about two Yards, and its Height nearly the same; however the Height gradually rises, till at last it measures in some Places from twelve to fourteen Yards. But notwithstanding the Entrance is so small, the whole Area within is of such a large Extent, that twenty thousand Men might with great Ease be plac'd therein, as I believe will scarcely be doubted, when I assure you, that, from the Entrance to the furthest Part of these darksome Cells, measures full four hundred Yards; and that these Passages are frequently ten or twelve Yards wide, with Branchings out

out on the Sides, into various Lanes and Labyrinth-kind of Windings, that every now and then open into one another; which renders it no easy Task to find the Way out, when a Person has been a little bewilder'd in these subterraneous Mazes.

Most of these Vaults are arched at Top, whereby the immense Weight, which every Moment presses on them, is well supported; a Weight no less than that of Hills, whose perpendicular Altitude above the Tops of these Arches is twenty or thirty Yards, if not much more. I have frequently, says my Correspondent, gone into these Caverns out of Curiosity; but could never perceive the least Appearance of those Damps\* which are so common in Mines, and other subterraneous Places, where the Air is stagnant for want of a due Current; which should seem to be the very Case here, as there is but one Entrance into it. The Passage indeed is horizontal, and open to the West Wind; but the included Air's being free from Putrefaction, may possibly be owing to the large Quantity of Salt which the Chalk contains.

How deep or thick these Rocks of Chalk are, no one, so far as I can find, can tell; for, in sinking the lowest Wells, they have never, that I know of, been dug thro'; and consequently must be exceeding deep. The Chalk at the further End of this Cavern is so very soft, that it may be moulded with the Hand like Paste; which I take to be its original Consistence, and what it always retains, till it becomes expos'd to the Air. In the very lowest Parts

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\* Those are commonly caused by sulphureous Vapours, which never appear in Chalk. *C. M.*

of these Vaults I have pick'd up several Kinds of Fossils, figur'd by marine Bodies; such as *Echini*, *Pectunculi*, common or fluted Cockle, *Belemnitea*, &c. and, by diligent Search, other Sorts might perhaps be found. Sounds made beneath these arched Roofs are strongly reflected from Side to Side; so that the least Whisper may be heard at a considerable Distance. The Beat of a Pocket-Watch was heard distinctly full twenty Yards from where it was plac'd.

I visited this Place on the 1<sup>st</sup> Day of *November* last, in order to try the Temperature therein, as to Heat and Cold; and carried with me a Thermometer regulated by one of Mr. *Hawksbee's*, which I set down at the further End of these Caverns; and letting it remain there for some time, I found the Mercury rested at  $52^{\circ}$ . which comparing with the Register I had kept, was, I found, within half a Degree of a Medium betwixt the greatest Heat and the sharpest Cold we have known in this City for ten Years past; and it is very probable, if the two Extremes had been taken more exactly, the Temperature in these Caverns would be found to come yet nearer to the Medium of Heat and Cold in this Climate.

*Hawksbee's Therm.*

The greatest Degree of Heat was <i>July 18. 1746.</i>	<i>15</i>
The greatest Degree of Cold was <i>Jan. 9. 1740.</i>	<i>88</i>

Which added together make	—	—	—	103
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The Medium of which is	—	—	—	$51\frac{1}{2}$
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I find,

I find, by inspecting Mr. *George Martin's* Collection, and Comparison of the Scales and Degrees of Heat with various Thermometers, that the Temperature of Heat in these Caverns coincides with that in the Cave at the Observatory at *Paris*, within one Degree; which I think comes very near, considering the Observations were made with different Instruments, and formed upon different Principles.

At the Foot of a high Hill, adjacent to these Vaults, issues out a curious Spring, whose Water I found exactly of the same Temperature with that underground; though, when the Thermometer was exposed to the open Air, it stood at  $57^{\circ}$ .

Permit me, Sir, to subscribe myself, with the utmost Truth and Respect,

*London, March 15.*

1747-8.

*Your most obedient*

*humble Servant,*

*Henry Baker.*

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A terrible Thunder-Storm, *June 12, 1748*, shook the Earth to such a Degree as to throw down those Chalk-Vaults.